MECHANIZED AIDS TO MANAGEMENT

ENGINEERING AND ADMINISTRATIVE DATA ACQUISITION SYSTEM

INDIVIDUAL CIRCUIT USAGE RECORDING

SYSTEM DEFINITIONS

CONTENTS PAGE

Figures

1. GENERAL

1.01 This section provides a description of the system definitions for use in the Engineering and Administration Data Acquisition System/Individual Circuit Usage Recording (EADAS/ICUR). Included are additions to the basic EADAS Sytem definition procedures. Where appropriate, it addresses the constraints of the ICUR Subsystem within the total system definition area.

1.02 Dial Facilities Management Practices, Division D, Section 4g, should be fully understood prior to using this section. Appendix B of Dial Facilities Management Practices, Division D, Section 4e, should also be available. This is the basic EADAS Position Practice for supplying, verifying, modifying, and deleting system definitions. Finally, the comparable EADAS/ICUR Position Practice, Dial Facilities Management Practices, Division D, Section 5f, Appendix D, should be available to aid in approaching the "how to" aspect of EADAS/ICUR System definitions.

1.03 When this section is reissued, this paragraph will contain the reason for reissue.

1.04 References in this section to methods, planning, requirements, service levels, and equipment quantities are based on American Telephone and Telegraph Company recommendations.

1.05 The title of each figure includes a number(s) in parentheses which identifies the paragraph(s) in which the figure is referenced.

1.06 A general description of EADAS/ICUR is available in Dial Facilities Management Practices, Division D, Section 5a.

2. SCOPE

2.01 The ICUR Subsystem of EADAS/ICUR has a major impact on two aspects of system definitions. They are:

(1) System/Schedules

(2) Channel/Definitions.

2.02 As described in Dial Facilities Management Practices, Division D, Section 5a, there are three main reasons for utilizing the ICUR option with EADAS. The first pertains to the economy in EADAS traffic data converter (ETDC) terminations, the second pertains to the use of the individual circuit usage samples for individual circuit analysis, and the third pertains to the software grouping of individual trunk or central office equipment components through use of a circuit grouping map (CGM). The third reason has enabled an ICUR office to eliminate the need for cross-connects on the traffic usage recorder (TUR) frames.

2.03 The maintenance of the CGM should be considered as a system definition because it is the key data base in EADAS/ICUR. As described later in this section, when a channel is defined in association with a TUR, a CGM is associated with the TUR.

2.04 The other system definitions described in Dial Facilities Management Practices, Division D, Section 4g, are not directly affected by the ICUR Subsystem. However, they should be reviewed and any anticipated interactions which a particular EADAS/ICUR may present should be considered on the following EADAS System definitions:

(a) Parameters

(b) Hourly reports

(c) Entities

(d) Calculations

3. CIRCUIT GROUPING MAP

3.01 The CGM is the data base in EADAS/ICUR. It replaces the wired register cross-connections and indicates how the individual circuit usage measurements should be combined into group measurements.

3.02 When a channel is defined in EADAS/ICUR and a TUR is defined on the channel, a grouping map is associated with the TUR. All assignment changes are made by using the grouping map update cards. This applies whether the updates are to equip a newly defined unequipped TUR or to subsequently change assignments. These cards are read into the EADAS/ICUR, via the card reader, at a time when none of the ICUR equipped TURs are operating.

3.03 The update cards contain some information which is required by the downstream program, Individual Circuit Analysis (ICAN), but not by the EADAS/ICUR central control unit (CCU). A portion of this additional information is unique to ICAN and a portion of it is available in Traffic Data Administration System (TDAS)/common update. If the operating telephone company has TDAS/common update resident in the same computer as ICAN, the appropriate information can be extracted from that data base and need not be entered on the update card. This leads to two formats for the grouping map update cards: one for use with TDAS/common update (company option A, Fig. 1) and one for use without TDAS/common update (company option B, Fig. 2).

3.04 Dial Facilities Management Practices, Division D, Section 5d, contains an appendix which describes the specific procedures for completing the six general classes of information on the CGM cards (Fig. 1 and 2) used to initialize and update the CGM.

3.05 A sound ICUR administrative procedure will be mandatory to maintain the integrity of the data base (grouping map) within EADAS/ICUR. Both circuit orders and Western Electric Company activity should be monitored to determine if and when updates must be made to the grouping map.

3.06 Images of the accepted cards, the day's ICAN tape-write schedules, and the updated CGMs are all written on the ICAN tape after the card-loading task is completed. The tape is then ready for usage tape-writes according to the ICAN schedule.

3.07 Reports of significant usage on switch, contact, horizontal, verticals (SCHVs) that are either unassigned or unequipped are provided at the receive only ICUR teletypewriter (TTY) (unusual usage reports). These are often caused by data-base errors such as incorrectly timed updates. If the data-base errors resulted from keypunch errors, they should be resolved at the CCU and entered the next day. Grouping map activity summary for ICAN will include all activity within the period, including the erroneous entry and its subsequent deletion. The person reviewing this report and reconciling it with the circuit order activity should be notified of the error and the necessary corrective action.

3.08 ICAN will provide a number of reports to assist in the administration of the CGM. The most timely of these is the daily EADAS/ICUR Map Activity Report provided for each channel. The purpose of this report is to identify erroneous or suspicious update cards for each TUR during the ICAN card validity tests. Because this report indicates inconsistency within an update or between the update and the existing assignments, it should be quickly returned for analysis.

4. SCHEDULES

4.01 Basic EADAS incorporates one set of 16 schedules. These enable the users to:

(1) Control the writing of accumulated grouped data to the TDAS output tape

(2) Produce hourly (routine) reports within EADAS

(3) Control the operations of the TURs.

In EADAS/ICUR, in addition to this set of schedules provided in basic EADAS, two new schedule sets may be considered. The first additional set of 16 schedules is provided to control the accumulation and writing of individual circuit usage data on the ICAN tape. The second is a group of 16 schedules that may be used to control the accumulation and writing of load balance (LB) data on the grouped LB tape. The first set will be called EADAS schedules, the second set will be called ICAN schedules, and the third set will be called LB schedules.

4.02 Due to the extremely large volumes of data which the ICUR Subsystem could generate, the EADAS schedules briefly discussed in 4.01 are not used in ICAN/LB collection intervals. It has been estimated that ICAN alone could exceed the TDAS (EADAS magnetic tape) data volumes by a factor of at least ten. Thus, the ICAN processing costs would be excessive if the basic EADAS schedules were followed. A separate group of LB schedules is provided so that LB data may be accumulated and written on tape only as needed. This eliminates the need to write massive amounts of LB data during hours when only trunking or peg count data may be required. As a result, the processing costs of TDAS (or its equivalent) will be reduced.

4.03 In order to provide the capability for reducing data volumes to reasonable levels, the ICUR Subsystem has been provided with separate ICAN and LB tape write schedules. Each has 16 additional schedules available. The separate scheduling capability permits the use of smaller time frames for maximum use of the ICUR features and to retain manageable accumulations of data. As explained in 4.04 and 4.05, ICAN and LB scheduling may provide for several hours of data accumulation prior to writing tape. This enhances the processing savings. Remember that in ICAN a substantial amount of usage must be recorded to preserve its report accuracy but that one 3-hour ICAN tape write summarizes as much information as six TDAS tape writes (assuming a 1/2-hour interval). For example, in order to prevent seldom-used, but good, circuits from appearing on the report, the Inactive Circuit Report in the ICAN analysis family will require a substantial amount of data.

4.04 There are some common characteristics which ICAN and LB scheduling share. These are not features of the basic EADAS scheduling capability. ICAN and LB schedules specify:

(1) The interval in which data should be accumulated

(2) The time when such data should be written on its appropriate magnetic tape.

These two features enable data to be summed for a number of system periods and then written on tape. The key to using this common ICAN-LB feature is the use of two special characters: ***S*** and ***W***.

4.05 The function of S and W is illustrated by the following.

Item	Function
SHH:MM	The character S indicates that the system should clear (zero) the appropriate data storage locations (LB or ICAN) and begin accumulating data at the time specified (HH:MM).

HH:MMW	W indicates that the data accumulated in the appropriate storage locations (LB or ICAN) should be written on magnetic tape at the time specified (HH:MM). When a W appears in an ICAN schedule, the system will also clear the individual circuit usage storage locations after the data have been written on tape. LB tape writes will not clear the storage location as indicated for ICAN.

4.06 Therefore, based on the information in 4.05, four basic types of entries are possible.

Entry Type	Meaning
SXX:XX-YY:YYW	An entry of this type indicates that the appropriate data storage area should be zeroed at time XX:XX; data are to be accumulated between the times XX:XX and YY:YY; and finally, the accumulated data are to be written on magnetic tape directly after the system period ending at YY:YY.
SXX:XX-YY:YY	This type of entry tells the system that data storage areas are to be cleared at time XX:XX; data are to be accumulated between the times XX:XX and YY:YY, inclusive; and no data of the indicated type are to be written on tape at this time (see Note below).
XX:XX-YY:YY	This entry indicates that data are to be accumulated (and added to data already in storage) between the times XX:XX and YY:YY, inclusive. No data are to be written on tape (see Note below).
XX:XX-YY:YYW	This type of entry specifies that data are to be accumulated (and added to any data already in the indicated storage locations) between the times XX·XX and YY:YY and subsequently written on magnetic tape after the system period ending at time YY:YY (see Note below).

Note: Generally, these uses of S and W should be applied only to LB schedules. See 4.07.

4.07 The following example illustrates the use of these features. Assume that it is desired that LB data be collected on a particular channel between the hours of 9 and 12, Monday through Friday, and that such data are only needed weekly. This requirement can be satisfied by assigning the channel the following type of LB schedule:

Load Balance Schedule

Mon	S9-12
Tue-Thur	9-12
Fri	9-12W

Hence, the required data would be written on magnetic tape at noon each Friday. It is generally more desirable, however, to provide at least one tape write per day so that data loss will be held to a minimum in the event of a system failure. This could be accomplished for the previous example by assigning the channel a schedule of the following type:

Load Balance Schedule

Mon-Fri	S9-12W

In this case, the LB data are written on the data tape each day at noon.

4.08 Prior to actually defining and entering ICAN and LB schedules the following items should be fully understood.

(1) With the release of EADAS generic 1C, the sequence of the scheduling dialogue is as shown in 4.11. Those systems ***not*** equipped with ICUR do not permit the user to assign an ICAN or LB schedule to a channel. In the case of DTS=, the appropriate response is the command DE:!

(2) The time sequences described in 4.04 must be specified in military time and must be

entered in chronological sequence. These periods may adjoin but not overlap each other.

(3) The system does not automatically ensure that TURs are turned on during ICAN/LB schedules nor during magnetic tape or hourly report schedules. It is strongly recommended that traffic usage schedules be checked frequently to confirm that they are on at least during the ICAN/LB schedules times.

(4) For individual circuits (or central office equipment), most of the significant data can be recorded in no more than three intervals during the whole day. For ICAN, 3-hour intervals are suggested and 2-hour intervals are suggested for LB. Generally, only one 2-hour interval need to be considered for LB. In any event, ICAN tape-write intervals should be selected so that the variation from hour-to-hour normally would not be more than 50 percent of the average load during this interval.

(5) ***Exclusive ICAN Considerations:***

(a) The individual collection intervals (see 4.04) should be written (W) on ICAN tape at least every 3 hours, regardless of the TUR scan cycle interval (that is, 100 or 200 seconds).

(b) To prevent overflow, EADAS/ICUR automatically clears the individual circuit usage storage area of a TUR any time the sum total of the cycle count associated with that TUR exceeds 108. Hence, an ICAN schedule entry which specifies an interval longer than 3 hours may cause erroneous data to be forwarded to ICAN.

(c) ***ICAN schedules should be constructed so that no data accumulation interval is scheduled to begin until at least one system period of normal TUR operation has occurred.***

(d) ***No ICAN schedule should contain an interval which overlaps the time in which a TUR detector test is to be executed.*** After a detector test, at least one system period of normal TUR operation should pass before any ICAN accumulation period is scheduled to begin.

A. ICAN Scheduling Procedures

4.09 As indicated previously, the ICAN schedules control the accumulation and writing of individual circuit usage to the ICAN tape. These data are used in ICAN for the following purposes:

(a) Detection of abnormally short holding time (ASH) circuits

(b) Identification of inactive (always idle/busy) circuits

(c) To provide individual circuit usage displays.

It is important to realize that all valid data received on an ICAN tape are used as shown above. As such, the ICAN schedules are implicitly specifying the times at which the indicated studies are to be carried out. Because of this, the following points should be considered when constructing and assigning ICAN schedules.

(1) ASH Analysis.

(2) The time required to detect an ASH circuit should be thought of in terms of the number of hours of data required. To equate this to days, one must know the amount and frequency that data are written on tape. For example, if ICAN's expected time for detection is 12 hours and only 3 hours of data are written on tape each day, it will take four days to achieve the desired result (as opposed to 1-1/3 days when 9 hours of data are written on tape daily). Generally, the ASH detection is most effective when data are gathered during periods when circuit groups are fairly heavily loaded. Data collected during idle periods do not inhibit detection (nor increase false alarms) but neither do they contribute to it. That is, such data provide little or no information on the behavior of faulty circuits. An exception to the previous rule occurs when machines employing some method of priority trunk or circuit selection (No. 1 crossbar, tandem, and step-by-step) are to be studied. In this situation highly preferenced circuits are often from 80 to 90 percent occupied during the busy hour. This reduces the visibility of abnormal behavior and as such makes faulty circuits more difficult to detect. To counter this, it is recommended that one study period be scheduled each day where the load of the machine (or more specifically, the load on the

circuit groups concerned) is at moderate levels. Best ASH algorithm performance is achieved when the load during a study session remains relatively uniform. As such, it is recommended that when multihour intervals are selected, each hour within the interval should have an average load which does not vary more than 50 percent from the average load during the interval.

(3) ***Inactive Circuits:*** This report is nominally generated weekly by ICAN. The principal consideration here is that enough data be collected to prevent seldom used, but good, circuits from being reported as inactive. With few exceptions, acquisition of from 6 to 9 hours of data per day will ensure that this goal is achieved. It should be noted that it is usually not necessary to collect data for this purpose late at night since ICAN examines all valid data received for inactivity. As a result of this and the weekly time frame of the report, highly used but good circuits are not likely to be declared falsely busy.

(4) ***Displays:*** The ICAN Individual Circuit Usage Display Report is often used as a tool for trouble analysis since it portrays average circuit occupancy over a requested interval. Because average occupancy is displayed, it is seldom necessary to schedule special time periods for study. Generally, those used for ASH and inactive analysis will serve the desired purpose.

4.10 In considering a methodology for constructing ICAN schedules, certain patterns become apparent. Generally, offices will experience one, two, or three periods during the day when traffic load is fairly high and uniform. Based on the previous considerations, some offices should be scheduled for all time frames while others only need to be observed (for ICAN) during united portions of the day. A key point is, however, that specific time periods are not extremely critical; that is, some periods convey more information than others but do not otherwise have negative effects. When all factors are considered, it should be possible to meet the desired goals using the 16 available schedules. The establishment of these schedules should be approached in the following manner.

(a) Begin by selecting four potential study periods to cover the day. Three of these should be designed to cover periods when offices typically experience fairly heavy traffic loads (for example, they should surround typical morning, afternoon, and evening busy hours). It should be noted that these study periods should not necessarily be centered around the busy hour but rather should be selected to cover a period when the traffic load is both heavy and uniform (see above). To illustrate this point, assume that the typical morning busy hour in an area is from 9:30 to 10:30. The traffic load probably builds rather dramatically just before the busy hour and then begins to trail off slowly afterwards. In this case, a study period of from 9 to 12 might be more appropriate than one from 8:30 to 11:30. The fourth study session should be selected to cover a period when most entities in the area experience a moderate traffic load. This will satisfy the requirement of 4.09(a). An example of four such study sessions is given in Figure 3.

(b) Next, assign a schedule to each combination of two or more sessions. As shown in Figure 3, this can be accomplished by using only 10 of the 16 available schedules.

(c) Finally, determine the characteristics of each switching entity to be studied and assign it a schedule. For example, a mixed business-residential office might be assigned schedule 0 (Fig. 3) while a purely residential machine would be better suited to schedule 2 (if it was a No. 5 crosbar) or schedule 9 (because of priority selection) if it was a step-by-step.

B. Load Balance Schedule Approach

4.11 Presumably, most local requirements for LB data will be significantly less in volume than either basic EADAS or ICAN requirements. In fact, a 2-hour spread of LB data can satisfy the requirements of most switchers. Within the 16 schedules available for LB collections, the CCU administrator should consult with dial administrators and attempt to define a spread of schedules which could satisfy the known switcher requirements. In addition to traffic patterns, possible multiple busy hours for different types of service in a common machine should be included as a basis for a schedule application. As in basic EADAS scheduling, consider the day as consisting of three sessions: morning, afternoon, and evening. Respectively, these are broken into 2-hour portions to provide a broad selection for the LB requirements. As indicated in Figure 4, a total of 12 specific 2-hour collections has been defined in the three time frames: three in the morning, five in the afternoon and four in the evening. Where an office has at least two types of service with different busy hour LB requirements which fall outside of the 12 individual schedules, schedules number 11 through 15 could be defined to encompass all of the multiple busy hour requirements. Although this may have the net effect of writing more LB data on tape than is needed in some offices, it will provide the desired data for downstream processing.

4.12 As described in 6.11 of Dial Facilities Management Practices, Division D, Section 4g, upon entering the schedule definition mode (EM:SC:!) the sequence is as follows:

(a) Schedule for day

(b) Schedule number (see 6.07 of Section 4g for suggested approach)

(c) Magnetic tape schedule

(d) Hourly report schedule

(e) TUR schedule

(f) Dial tone speed schedule

(g) ICAN schedule

(h) LB schedule

(i) Schedule for day

(j) Exit

See Figure 5 for an example of how to enter ICAN and LB schedules.

4.13 In the schedule mode, all responses must be followed by an exclamation point (!). If an invalid response is entered the program will respond with INVALID INPUT and the response must be reentered. This mode may be exited by typing EX:! It may be restarted by typing FI:! Exiting prematurely or restarting prior to completion will leave the previously existing schedule unchanged (if there was one).

4.14 Refer to Dial Facilities Management practices, Division D, Section 5f, Appendix D, to determine the method for modifying, verifying, and deleting either ICAN or LB schedules.

4.15 As suggested for basic EADAS schedules, the CCU administrator should retain copies of all effective EADAS/ICUR schedules. Also, it is advantageous for the users involved (including dial administration groups) to retain copies of these schedules.

5. CHANNEL DEFINITIONS

5.01 This task is the basic EADAS definition most affected by the ICUR Subsystem. Although the initial items of channel definition dialogue are common, the response to CHAN TYPE (for instance, ESS or ETDC with ICUR) determines the remaining sequence of questions for EADAS. A procedure for supplying and deleting the ICUR-equipped channel definitions is included in Appendix D of Dial Facilities Management Practices, Division D, Section 5f. The basic EADAS channel definition explanation in 7.02 of Dial Facilities Management Practices, Division D, Section 4g, should be fully understood.

5.02 The following items related to ICUR-equipped channel definitions must be fully understood to effectively implement EADAS/ICUR.

(a) Should any previously defined ICUR-related channel definition parameter be modified, the CGM associated with that channel will have to be reentered.

(b) The data collection unit-identification number (DCU-ID) must include Snn in the last three character slots where nn represents the hardware channel entered in the second step of the channel definition mode.

(c) Systems not equipped with ICUR will not respond with ICUR-related questions beyond TUR-N!

(d) In responding to the various register-type questions (scaled, peg count, discrete ETDC scanning) the following points are significant.

(1) Single register values may be entered in any order (separated by commas).

(2) Ranges of values must be entered with the smallest number in the range entered first (for example, 231—230).

(3) Assignment of one register on an ETDC card to any of these register types implicitly assigns all data collection devices (DCDs) (32) on the same card to the indicated register types. As indicated in Figure 6, TUR 0 has registers 640 through 864 identified. This equates to eight cards, seven at full capacity and only one DCD assigned on number eight.

(4) A card (32 DCDs) can be assigned only one function. If a non-ICUR card is assigned to both the TDRS 1A TUR or peg count converter and the ICUR ETDC, the system's response will be:

INVALID CARD ASSIGNMENT

(5) As previously described, ICAN and LB schedule definitions are not checked for consistency with the TUR schedules defined in system parameters. It is recommended, therefore, that the TUR schedules and the ICAN and LB schedules be specifically compared to ensure that TUR schedules include at least the scheduled ICAN/LB hours of collection.

(6) Should a second software channel be required, it is recommended that the highest-numbered unassigned and preferably unequipped hardware channel be utilized (starting with channel 99 in a fully equipped CCU). This will accommodate the second software channel but also, in effect, block out that hardware channel for subsequent use. If the user should subsequently attempt to assign a now fully equipped hardware channel (in this case, 99), EADAS will respond with:

ALREADY DEFINED
ADDITION CH NO =

(7) Each TUR has been provided access to as many as 320 non-LB DCDs. These are used for EADAS surveillance reports (see Dial Facilities Management Practices, Division D, Section 4h) and for 5-minute availability to EADAS/NM. The 320 DCDs (registers) are assigned in groups of 32. To EADAS, this assignment may be considered to be the same as assigning a channel card; thus, the groups of 32 DCDs may be considered equivalent input cards. Access to a specific equivalent input card may be shared by more than one TUR.

(8) If a hardware channel requires a second software channel (see [6] above), all non-LB DCDs (see [7] above) must be associated with the second software channel. Internally they are numbered from 1000 to 1991. The thousands digit should ***not*** be used during channel definition or in calculation definitions. However, the ICUR update cards (CGM) do require both the use of the thousands digit and the ***hardware*** channel to which the ETDC is actually connected.

(9) The system does ***not*** check the card definitions for consistency on the earlier questions of SCALED REGS =, USAGE REGS =, PEG REGS =, and DISCRETE INPUTS with REGISTERS= after NEXT TUR NO=. As was suggested in (5) on TUR schedules, the register assignments should be checked manually to confirm their validity.

(10) Just as the non-LB DCDs (see [7] above) may be collected for EADAS surveillance purposes, EADAS/ICUR provides the capability for grouping total office load measurements. These LB data DCDs may be combined into as many as seven load grouping code registers per TUR. These load grouping codes are equivalent to the detector group usage registers on the TUR. These groupings may include categories such as line link frames, trunk link frames, etc. Load grouping code accumulated data are transmitted to EADAS in the same manner as grouped non-LB data.

(11) In assigning the load grouping code registers in the channel definition dialogue, load grouping code 0 ***always*** represents the non-LB DCDs; that is, load grouping code 0 represents ***no*** load grouping code. Where applicable, the same register (DCD) may be assigned to serve as load grouping code on more than one TUR on a given channel. For example, assume that previous TUR assignments resulted in the line link frames of a No. 5 crossbar office being split between TUR 0 and TUR 1. If it is desirable to assign load grouping code 1 to measure total line link frame load, the same register could be entered

for load grouping code 1 for both TUR 0 and TUR 1. This enables each TUR to score its own register for line link frame horizontal group usage and simultaneously provides the combined result by only using one register assignment.

5.03 As in basic EADAS, the channel definition mode (EM:CH:!) is used to enter the necessary information. As indicated in 7.02(e) of Dial Facilities Management Practices, Division D, Section 4g, a unique dialogue is pursued when ESS channels are defined. Similarly, with an ICUR-equipped ETDC, at the EADAS question CHAN TYPE?, the proper response is ETDC! Subsequently, at the question ICUR?, the response is Y! This causes EADAS to then go into the ICUR dialogue, providing the following (see Fig. 2):

(a) ICAN and LB schedule numbers

(b) Number of software channels required

(c) Associated TURs

(d) Range of non-LB DCDs to which each indicated TUR is to have access

(e) Load grouping code assignments.

5.04 The constraints discussed in 7.04 through 7.06 of Dial Facilities Management Practices, Division D, Section 4g, are also applicable to EADAS/ICUR.

TUR FRAME ________

SWITCH ________ CONTACT ________
(INITIAL CONVERSIONS)

EADAS/ICUR
CIRCUIT GROUPING UPDATE

PAGE ___ OF ___

DATE PREPARED ____________

NOTICE

SHOW ALL LETTERS AS UPPER CASE
SHOW THESE LETTERS AS INDICATED: G, I, J, Ø, Ƶ

	TUR REFERENCE					GROUPING UPDATE				ACT.			DCU IDENTIFICATION						SCHV MODIFIER					
	CHNL	TUR		SCHV		DCD		LGC		ORD	TYPE		CLLI CITY	CLLI ST	CLLI BLD	DCU NO.		STDY		COMP. NO.		INVRT		REFERENCE
	1-2	3	4-5	6-9	10-11	12-15	16	17	18	19	20	21	22-25	26-27	28-29	30-32	33	34	35	36-39	40	41	42-64	65-80
1																								
2																								
3																								
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10																								
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13																								
14																								
15																								
16																								
17																								
18																								
19																								
20																								

TOTAL NUMBER OF ENTRIES SHOWN

BTL - 3424-1
(11/74)

COMPANY OPTION A

PREPARED BY ____________
TN ____________

Fig. 1—Company Option A (3.03, 3.04)

TUR FRAME ________

SWITCH ________ CONTACT ________
(INITIAL CONVERSIONS)

EADAS/ICUR

CIRCUIT GROUPING UPDATE

PAGE ___ OF ___

DATE PREPARED ____________

NOTICE

SHOW ALL LETTERS AS UPPER CASE

SHOW THESE LETTERS AS INDICATED: G, I, J, Ø, Ƶ

	TUR REFERENCE					GROUPING UPDATE				ACT.			DCU IDENTIFICATION					SCHV MODIFIER						DCD MODIFIERS									
													CLLI																				
	CHNL	TUR		SCHV		DCD		LGC		ORD	TYPE		CITY	ST	BLD	DCU NO.		STDY		COMP. NO.		INVRT		COMPONENT DESCRIPTION		TU		MACH TYPE		SCAN		REFERENCE	
	1 2	3	4 5	6 7 8 9	10 11	12 13 14 15	16	17	18	19	20	21	22 23 24 25	26 27	28 29	30 31 32	33	34	35	36 37 38 39	40	41	42	43 44 45 46 47 48 49 50 51 52 53	54	55 56 57	58	59 60 61	62	63	64	65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	
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19																																	19
20																																	20

TOTAL NUMBER OF ENTRIES SHOWN ____________

PREPARED BY ____________

TN ____________

COMPANY OPTION B

BTL - 3424-1
(11/74)

Fig. 2—Company Option B (3.03, 3.04, 5.03)

SAMPLE ICAN TAPE-WRITE SCHEDULES

Morning	(for example, 9:00 am-12:00 noon)
Afternoon	(for example, 1:30-4:30 pm)
Dinner	(for example, 5:00-6:30 pm)
Evening	(for example, 6:30-8:30 pm)

SCHEDULES (SAMPLE)

0 — M, A	8 — M, D, E
1 — M, E	9 — A, D, E
2 — A, E	10 — Available for Special Needs
3 — M, D	11 — Available for Special Needs
4 — A, D	12 — Available for Special Needs
5 — D, E	13 — Available for Special Needs
6 — M, A, E	14 — Available for Special Needs
7 — M, A, D	15 — Available for Special Needs

Fig. 3—Sample ICAN Tape Write Schedules (4.10)

SUGGESTED LB SCHEDULE PROCEDURE

SCHEDULE NO.	TIME START (S)		TIME END (W)	COMMENTS
00	S09:00	—	11:00W	Morning
01	S09:30	—	11:30W	Session
02	S10:00	—	12:00W	Busy Hours
03	S13:00	—	15:00W	Afternoon
04	S13:30	—	15:30W	Session
05	S14:00	—	16:00W	Busy
06	S14:30	—	16:30W	Hours
07	S15:00	—	17:00W	
08	S18:30	—	20:30W	Evening
09	S19:00	—	21:00W	Session
10	S19:30	—	21:30W	Busy
11	S20:00	—	22:00W	Hours
12	S08:00	—	08:30W	Morning
	S08:30	—	09:00W	Session
	S09:00	—	09:30W	Multiple
	S09:30	—	10:00W	Overlapping
	S10:00	—	10:30W	But Not
	S10:30	—	11:00W	Coincident
	S11:00	—	11:30W	Busy
	S11-30	—	12:00W	Hours
13	S13:00	—	13:30W	Same as
	S13:30	—	14:00W	Schedule 12
	S14:00	—	14:30W	But
	S14:30	—	15:00W	Afternoon
	S15:00	—	15:30W	Session
	S15:30	—	16:00W	
	S16:00	—	16:30W	
	S16:30	—	17:00W	
14	S18:00	—	18:30W	Same as
	S18:30	—	19:00W	Schedule 12
	S19:00	—	19:30W	But
	S19:30	—	20:00W	Evening
	S20:00	—	20:30W	Session
	S20:30	—	21:00W	
	S21:00	—	21:30W	
	S21:00	—	22:00W	
15	S08:00	—	08:30W	All
	S08:30	—	09:00W	Data
		⋮		All
				Day!
	S21:00	—	21:30W	
	S22:30	—	22:00W	

Fig. 4—Suggested Load Balance Tape Write Schedule (4.11)

EXAMPLE 1

```
EM:SC!
SCHEDULE DEFINITION MODE
SCHEDULE FOR DAY? MO!
SCHEDULE NUMBER=2!
CURRENT  SCHEDULE 2  IS   NOT DEFINED
COPY SCHEDULE (DAY # OR IF NEW !)  !
MT=9-23!
HR=DE!
TU=9-23!
DTS=DE!
ICAN=DE!
LB=DE!
SCHEDULE FOR DAY? EX:!  OK
```

EXAMPLE 2

```
EM:SC!
SCHEDULE DEFINITION MODE
SCHEDULE FOR DAY? MO!
SCHEDULE NUMBER=1!
CURRENT  SCHEDULE 1  IS   NOT DEFINED
COPY SCHEDULE (DAY # OR IF NEW !)  !
MT=9-23!
HR=1Ø-12!
TU=9-23!
DTS=DE!
ICAN=S9-1ØW,S1Ø-11W,S11-12W!
LB=S9-12W!
SCHEDULE FOR DAY? EX:!  OK
```

Fig. 5—Schedule Definition Mode Example (4.12)

```
EM:CH:!
   CHANNEL DEFINITIQN MODE
CHAN NO= 2!
DCU ID?
WPBHFLGRSØ2!
SCHED NO= Ø!
CALC'S ON? !
MAG TAPE ON? !
CHAN TYPE? ETDC!
TUR? Y!
SCALED REGS= 32-127,192-223!
USAGE REGS= !
PEG REGS= Ø-31,224-447,48Ø-543!
DISCRETE INPUTS= !
ICUR?  Y!
ICAN SCHED NO= Ø!
LB SCHED NO= Ø!
ARE 2 CHANNELS REQUIRED? !
NEXT TUR NO= Ø!
REGISTERS= 64Ø-864!
LGC1 REG= 749!
LGC2 REG= 755!
LGC3 REG= !
LGC4 REG= !
LGC5 REG= !
LGC6 REG= !
LGC7 REG= !
NEXT TUR NO= 1!
REGISTERS= 864-896!
LGC1 REG= !
LGC2 REG= !
LGC3 REG= !
LGC4 REG= !
LGC5 REG= !
LGC6 REG= !
LGC7 REG= !
NEXT TUR NO= !
PUT ONLINE? Y!

   CHANNEL DEFINITION MODE
CHAN NO= EX:!  OK
```

Fig. 6—Channel Definition Mode Example (5.02)